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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/819,329	03/28/2001	Akio Enomoto	791_142	4236
25191	7590	03/16/2004	EXAMINER	
BURR & BROWN PO BOX 7068 SYRACUSE, NY 13261-7068			CREPEAU, JONATHAN	
			ART UNIT	PAPER NUMBER
			1746	

DATE MAILED: 03/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/819,329

Applicant(s)

ENOMOTO ET AL.

Examiner

Jonathan S. Crepeau

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2,3,5-8,10-16,18,19 and 21-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-16,21,23,25,27 and 28 is/are allowed.
- 6) ☒ Claim(s) 2,3,5-8,18,19,22,24 and 26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office action addresses claims 2, 3, 5-8, 10-16, 18, 19, and 21-28. Claims 10-16, 21, 23, 25, 27, and 28 are allowed. Applicant's argument regarding the §112, first paragraph rejection of claim 12 is persuasive and this rejection has been withdrawn. Claims 2, 3, 5-8, 18, 19, 22, 24, and 26 remain rejected under 35 USC §103 for the reasons of record. Additionally, claims 2, 3, 6, 7, 9-16, 18, 19, and 21-27 remain rejected under the doctrine of obviousness-type double patenting over the '108 application. Accordingly, this action is made final.

### ***Terminal Disclaimer***

2. The terminal disclaimer filed on December 24, 2003 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent 6,468,692 has been reviewed and is accepted. The terminal disclaimer has been recorded.

### ***Claim Rejections - 35 USC § 103***

3. Claims 2, 3, 6, 7, 18, 19, 22, 24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-162801 in view of EP 895297 (Nemoto et al).

Regarding claims 6 and 19, JP 10-162801 teaches a lithium secondary battery comprising an electrode body wound on a hollow winding core (13; see abstract, Figure 1). The battery comprises a cylindrical battery case having both ends open (see Figure 6), and electrode caps (2,

3) having internal and external terminals (see Fig. 1). Regarding claims 3 and 6, the electrode caps have center hollow portions (4) functioning as pressure release holes in a position corresponding with the center axis of the winding core (see Fig. 1, paragraph 14 of the machine translation). Regarding claim 2, the center axis of the winding core overlaps the center axis of the battery case (see Fig. 1). Regarding claims 6 and 7, the area of the hollow portion of the winding core and the area of the pressure release hole are identical (see Fig. 1). Regarding claim 19, the electrode caps are formed in approximately rotary symmetry around the center axis of the battery case (see Fig. 1).

JP '801 does not expressly teach that the battery is a lithium secondary battery, as recited in claims 6 and 19. The reference further does not teach that the battery has a capacity of at least 2 Ah, that the area of the pressure release hole is larger than  $0.3 \text{ cm}^2$  (claims 6, 19, and 20), or that the ratio of the area to the capacity is larger than  $0.02 \text{ cm}^2/\text{Ah}$  (claim 6). The reference further does not teach that the pressure release hole is used as the electrolyte solution inlet (claim 18), or that the battery is used in electric vehicles (claims 22, 24, and 26).

EP '297 teaches a lithium secondary battery in the abstract. The battery preferably has a capacity of 5Ah, as disclosed in paragraph 27. The battery further comprises pressure release mechanisms having areas of larger than  $0.1 \text{ cm}^2$ , whereby the ratio of the area to the capacity is in the range of  $0.05\text{-}2.0 \text{ cm}^2/\text{Ah}$  (see paragraphs 76 and 83). The battery is used in electric vehicles and hybrid electric vehicles (see paragraph 101).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of EP '297 to use a large capacity lithium secondary battery as the battery of JP '801.

In paragraph 2, EP '297 teaches that lithium secondary batteries have "large energy densit[ies]" and are an "effective means for using electric power by storing the electric power in the night. Thus, it is eagerly desired to put a large capacity lithium secondary battery, which is suitable for these uses, into early practical use." Accordingly, the artisan would be motivated to use a large capacity lithium secondary battery as the battery of JP '801.

Further, the artisan would be motivated by the disclosure of EP '297 to use valves in the battery of JP '801 having areas larger than  $0.1 \text{ cm}^2$ . In paragraph 83, EP '297 teaches that "it is preferable to make the opening area of the pressure release mechanism  $0.1 \text{ cm}^2$  or more in order to definitely operate the opposite pressure release mechanisms and to secure the safety by making the difference in the operation pressure of the opposite pressure release mechanisms preferably not larger than  $8 \text{ kg/cm}^2$ ." Accordingly, this would provide motivation for the artisan to use valves in the battery of JP '801 having areas larger than  $0.1 \text{ cm}^2$ . Further, the artisan would be motivated by the disclosure of EP '297 to use capacity and area values such that the ratio of the area to the capacity is in the range of  $0.05\text{-}2.0 \text{ cm}^2/\text{Ah}$ . In paragraph 77, EP '297 teaches that when this value is below 0.05, "the pressure release is not sufficiently carried out and accidents such as burst or firing of a battery is caused." Similarly, in paragraph 78, the reference teaches that when the value is larger than 2, "there is a fear that a part of the internal electrode body or components of the battery would jump out from the opening portion, or when a part of the internal electrode body jumps out in the state of a short circuit, inflammable materials around the battery would be fired or burned." Accordingly, this would motivate the artisan to use capacities and areas in the battery of JP '801 such that the ratio of the area to the capacity is in the range of  $0.05\text{-}2.0 \text{ cm}^2/\text{Ah}$ .

Regarding claims 22, 24, and 26, these claims recite the use of the battery in an electric vehicle or hybrid electric vehicle. Although EP '297 discloses the use of its battery in such a vehicle, these claims do not have to be accorded patentable weight since they recite an intended use. See MPEP §2114. Claim 18, which recites the intended use of the pressure release hole as an electrolyte inlet, also does not have to be accorded patentable weight for this reason.

4. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-162801 in view of EP 895297 as applied to claims 2, 3, 6, 7, 18, 19, 22, 24, and 26 above, and further in view of Teramoto (U.S. Patent 5,571,632).

JP '801 does not expressly teach that the winding core has a thickness of at least 0.8 mm (claim 5), or that the winding core is made of aluminum (claim 8).

The patent of Teramoto is directed to a lithium battery. In column 3, line 38, the reference teaches an inner tube (i.e., winding core) (11) having a thickness of 2 mm. In column 4, line 13, the reference teaches that the inner tube is made of aluminum.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the inner tube of Teramoto as the winding core of JP '801. In column 5, line 57, Teramoto teaches that by using the inner tube, "it is possible to easily affect the sealing by, for example, the pipe expander. [...] In addition, it is possible to obtain a high sealability or hermetic property." Accordingly, this would provide sufficient motivation for the artisan to use the inner tube of Teramoto as the winding core of JP '801.

### *Double Patenting*

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 2, 3, 6, 7, 18, 19, 22, 24, and 26 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 2, 3, 5, 6, 9, 10, 12-16, and 54-63 of copending Application No. 09/863,108 in view of EP 895297. The claims of the '108 application do not expressly recite the capacity values and pressure release areas recited in claims 6 and 19. EP '297 teaches a lithium secondary battery preferably having a capacity of 5Ah, as disclosed in paragraph 27. The battery further comprises pressure release mechanisms having areas of larger than  $0.1 \text{ cm}^2$ , whereby the ratio of the area to the capacity is in the range of  $0.05\text{-}2.0 \text{ cm}^2/\text{Ah}$  (see paragraphs 76 and 83).

The artisan would be motivated by the disclosure of EP '297 to use a large capacity lithium secondary battery as the battery of the '108 claims. In paragraph 2, EP '297 teaches that lithium secondary batteries are an "effective means for using electric power by storing the electric power in the night. Thus, it is eagerly desired to put a large capacity lithium secondary battery, which is suitable for these uses, into early practical use." The artisan would further be

motivated by the disclosure of EP '297 to use valves in the battery of the '108 claims having areas larger than  $0.1 \text{ cm}^2$ . In paragraph 83, EP '297 teaches that "it is preferable to make the opening area of the pressure release mechanism  $0.1 \text{ cm}^2$  or more in order to definitely operate the opposite pressure release mechanisms and to secure the safety by making the difference in the operation pressure of the opposite pressure release mechanisms preferably not larger than  $8 \text{ kg/cm}^2$ ." Further, the artisan would be motivated by the disclosure of EP '297 to use capacity and area values such that the ratio of the area to the capacity is in the range of  $0.05\text{-}2.0 \text{ cm}^2/\text{Ah}$ . In paragraph 77, EP '297 teaches that when this value is below 0.05, "the pressure release is not sufficiently carried out and accidents such as burst or firing of a battery is caused." Similarly, in paragraph 78, the reference teaches that when the value is larger than 2, "there is a fear that a part of the internal electrode body or components of the battery would jump out from the opening portion, or when a part of the internal electrode body jumps out in the state of a short circuit, inflammable materials around the battery would be fired or burned." Accordingly, since this would motivate the artisan to use capacities and areas in the battery of the '108 claims such that the ratio of the area to the capacity is in the range of  $0.05\text{-}2.0 \text{ cm}^2/\text{Ah}$ , the instant claims define an obvious variation of the '108 claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.



*Response to Arguments*

7. Applicant's arguments filed December 24, 2003 have been fully considered but they are not persuasive. Applicants assert that "the battery of EP '297 does not include a winding core, let alone a winding core having a center hollow portion which has a sectional area of larger than  $0.3 \text{ cm}^2$ . Accordingly, EP '297 fails to contain disclosure which would have suggested to one of skill in the art to provide the battery of JP '801 with a winding core having a center hollow portion sectional area of larger than  $0.3 \text{ cm}^2$ ." However, it is submitted that the EP '297 reference provides motivation to use *pressure release areas* in JP '801 that are larger than  $0.1 \text{ cm}^2$ , as set forth in the rejection above. Accordingly, since the pressure release areas and the hollow area of the winding core of JP '801 are the same size, the disclosure of EP '297 would also render obvious the claimed range of the hollow area of the winding core.

Applicants further assert that Example 2 of the present specification shows unexpected results over Comparative Example 4 with respect to variable  $S_2$ , the hollow area of the winding core. It is acknowledged that Example 4 shows a favorable result in the nail piercing test using an  $S_2$  area of  $0.38 \text{ cm}^2$ , while Comparative Example 4 shows an unfavorable result using an  $S_2$  value of  $0.20 \text{ cm}^2$ . However, the Applicant's attention is directed to Comparative Example 1, which shows an unfavorable result when an  $S_2$  value of  $0.64 \text{ cm}^2$  is used. Thus, Comparative Example 1 is evidence that the claimed range of  $S_2$  ( $>0.3 \text{ cm}^2$ ) does not alone produce the desired favorable result. In other words, Applicants have not isolated variable  $S_2$  and demonstrated that this variable is the only variable that produces an unexpected result. From Comparative Example 1, it appears that the thickness of the winding core is also a critical variable. It is submitted that such limitation would also have to be incorporated into the independent claims for

the claims to be commensurate in scope with the results that are shown. Furthermore, it is unclear if the  $S_2$  value of  $0.38 \text{ cm}^2$  is close enough to the claimed lower endpoint of  $0.30 \text{ cm}^2$ . Additional results showing  $S_2$  values closer to  $0.30 \text{ cm}^2$  may also be helpful in distinguishing the claims over the prior art.

*Allowable Subject Matter*

8. Claims 10-16, 21, 23, 25, 27, and 28 are allowed.
9. The following is a statement of reasons for the indication of allowable subject matter:

The reasons for allowance of independent claim 14 were given in the previous Office action and remain applicable. In addition, independent claim 28 has been amended to incorporate the allowable features of claim 14 and is thus allowable for the same reasons.

*Conclusion*

10. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

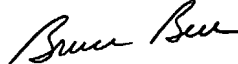
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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached at (571) 272-1302. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (703) 872-9306.

Jonathan Crepeau  
Patent Examiner  
Art Unit 1746  
March 9, 2004

  
BRUCE F. BELL  
PRIMARY EXAMINER  
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